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Office of the  
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of Canada



Bureau du  
vérificateur général  
du Canada

DISCUSSION PAPER NO. 51

**A RESULTS-ORIENTED APPROACH  
TO COMPREHENSIVE AUDITING**

by Jack Wadsworth and Don Young

June 1985

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## **Introduction**

The purpose of this paper is to contribute to the corporate memory of audit experience. While it records the details relevant to a specific audit project, it may be read for the following aspects of general interest:

- the advantages of a results-oriented approach compared with a systems (perhaps better described as procedures-based) approach;
- a simplified approach to the audit of applied research;
- interviewing by telephone;
- maintaining a productive relationship with the auditee.

We therefore describe the specific audit project in enough detail to support these general points. The paper concludes with a discussion of how this approach will affect the Auditor General's mandate and the productivity of the Office's resources.

## **The Audit Project**

In 1984 the comprehensive audit of the Department of the Environment, which is conducted in phases, concentrated on the Environmental Conservation Service. Parks Canada was the focus in 1983. The mandate of the Service is to promote the sound management of the three resources: inland waters, wildlife, and land. Water management research was chosen as our specific audit project as one of the two major activities associated with inland waters. What follows below is a description of how the project was designed, how it was executed, what our findings and conclusions were and finally, what subsequent analysis we performed in order to make relevant recommendations to the Department.



## Design of the Project

Through our usual audit planning processes, we reached an understanding that water management research was an activity dedicated to providing information needed by managers of water projects serving a national purpose. This information could only be obtained by performing applied research. Departmental management confirmed the view that water management research was therefore essentially a service.

How does the Office audit to determine whether or not a service is being provided with due regard for efficiency and economy?

The usual method we adopt in the Office is to perform a procedures-based audit which concentrates on the management processes employed to produce the service, such as planning, allocating, acquiring, operating, controlling and evaluating. However, we rejected such an approach in this case for several reasons.

First, during the planning phase we observed that the two research institutes where the research activity was carried out were particularly skilled at managerial processes (smoke and mirrors). Hence we considered that a procedures-based approach would not allow us to deal readily with what perhaps is one of the inherent weaknesses of applied research in Government\* that of serving the purposes of the researcher more than those of a specific client.

Also, because of the limited time and resources available, we needed to explore alternative audit approaches that promised increased productivity from limited OAG resources.

Finally, since we wanted to report our audit findings and conclusions in simple terms to our lay clients we saw a clear need to avoid the technical,

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\* See page 2 of the report "Task Force on Federal Policies and Programs for Technological Development", July 1984, in which Douglas Wright defines "supply-driven" versus "demand-driven" research.





complex and esoteric involvement of the researchers. We needed an audit approach that did not require either an understanding of the research or of what seemed to be very complex managerial processes.

Through the process of continuous dialogue we obtained the auditee's agreement as to the applicability of the simple criterion of use as a test of whether or not the research had provided service to the managers of inland water projects. We defined use by water managers very broadly as an influence by the research on any policies, regulations or operations relating to inland waters.

The auditee was confident that the research would meet the criterion of use. Managers stressed that their research work was of a practical nature aimed at solving real problems and not concerned with the purer or basic concern of proving why "water is wet". The managers' acceptance of the use criterion implied that they believed value for money (or due regard for economy and efficiency) would be demonstrated by a high percentage of use of the research products (or outputs) in the management of inland waters. It also suggested that they believed the research activities were intimately involved with water management problems.

The design of a results-oriented audit rapidly evolved, with the objective of determining whether or not the products or outputs of the research activity were used by the managers of inland waters.

Our detailed audit program had the following major components:

- a questionnaire to solicit the researcher's view of use (copies are available from the authors);
- a questionnaire to solicit the user's view of the research (copies are available from the authors); and
- a means of sampling from among the research project population for the purpose of completing the two questionnaires.





The questionnaires were designed to make the researcher the focus of the review. They also allowed OAG staff to remain neutral in that they did not have to pass judgement as to the nature of the research or the nature of its use. They allowed us to determine the population of potential users; in fact, the researcher could lead us to all users (potential and actual) and give us a total listing of use and impact. They also allowed the user (or potential user) to say whether the research product had been or was likely to be used and explain the nature and impact of use.

In choosing a representative sample of the research project population to complete the questionnaires, the following considerations were taken into account:

- the diverse nature of the population -- each project was different in size, type and the issues;
- the finite time available for determining use; and
- the possibility that the researcher's and user's memories of projects completed and used in the past might be somewhat dimmed.

It was therefore decided initially to subject all the research projects that were under way in fiscal 1982-83 to the questionnaires. The total population for 1982-83 appeared to be suitable for the resources which we had available to carry out the review. Also, having all the projects within one fiscal year would reduce concerns that could be raised by sampling from research populations in several fiscal years. The choice of fiscal 1982-83 was a compromise between allowing too little time for use and allowing too much time, so that memories of the researcher and user could be dimmed.



## **Execution of the Project**

Having identified the research projects (and the key researchers) for 1982-83, we began with the questionnaire designed to gain the researcher's view of research use. These were initially completed through personal interviews, involving only one member of OAG staff and taking one to one and a half hours. The major outputs from each completed questionnaire were as follows:

- general understanding of the research product, elicited through carefully structured questions and the various classifications in the questionnaire;
- a list, with telephone numbers whenever possible, of actual and potential users; and
- a completed questionnaire signed off for substantive content by the interviewer and interviewee.

Telephone interviews were conducted with equal success. A copy was mailed out for sign-off. Interview times were approximately the same but we saved considerably on set up times, since most of the personal interviews involved travel to locations throughout the national capital region or to Burlington, Ontario.

Using the referrals provided by the researchers, we completed the questionnaires to solicit the user's view of the research, mainly through telephone interviews. Because the completed "researcher's view of use" questionnaire gave us referrals to several users, telephone interviews were essential. The users (actual and potential) were distributed throughout the North American continent and a few were in Europe. Copies of these completed questionnaires were also mailed out for sign-off. The user's (potential and actual) view of research use, provided by the completed questionnaire, yielded the following outputs:

- a corroboration of our lay understanding of the research product established through the "researcher's view of use" questionnaire;





- a description of the nature of the use (actual or potential); and
- a completed questionnaire signed off for substantive content by the interviewer and interviewee.

### **Audit Findings and Conclusions**

Although we intended to review the total population of the research projects that were under way in fiscal 1982-83, the review was halted after sampling approximately one quarter of the population (i.e., 52 projects). We considered that this sample was a reasonable and fair representation of the population, due to the confirmation, by the later part of the sample, of a pattern that was rapidly established during the early part of the sample.

Any concern about a bias in our sample against the research products could be balanced by the factors that represented a bias somewhat in favour of the research projects.

We clearly signaled our intention to solicit use of the research projects or products to the two research institutes during our set-up work (designing and testing of the questionnaires). All the research staff had been circulated by the management of the institutes to prepare for our detailed review. They were therefore well prepared for us and aware of our intention to review the use of their research work. Further, our detailed questionnaire could be considered to be an instrument for eliciting as opposed to suppressing considerations of use.

Also, our interpretation of use could be considered generous in that we did not impose any qualifications as to the quantity or quality of use. Since the questionnaire review process generated up to four potential users or uses, any confirmation by any one of these referrals that the research had affected or influenced any policy, regulation, or operation was accepted as use. We also accepted that the effect or influence could be produced by any research product





such as a report, a publication, a mathematical model, a method, an instrument or a consultation (verbal or written).

Before discussing our audit findings and conclusions we must stress that our use criterion was rudimentary in that it was not concerned with the quality of use but only with the fact of use. This was simply that it had been used in some way and somewhere by managers of water projects. Our testing of water management research in this manner is akin to testing a repair shop for diesel engines for ice breakers. The test was not concerned with the quality of the service that had been performed on the engines. I merely tested that the work that had been done in the repair shop was indeed on ice breaker diesel engines. Such testing is remote from program effectiveness evaluation; we were not concerned with how good the diesel driven ice breakers were at breaking ice, creating jobs or fostering international relations.

Two types of findings were obtained: quantitative findings relating to use; and qualitative findings relating to the characteristics of the research projects. On the basis of the quantitative findings relating to use, we rapidly concluded that the water management research activity did not meet the use criterion. The qualitative findings relating to the characteristics of the research projects gave us a background for subsequent analysis, which is described below.

### **Analysis of the Findings**

Looking back, we can see that the powerful advantages of the results-oriented approach emerged at this point. It had enabled us to get rapidly at the major issue in the water management research activity, i.e., the research was not connected to the needs of the intended client. It had also given us some important qualitative information that suggested where the weaknesses were in the management of research. Theoretically we now had two alternatives.

We could devise a **very selective** procedures-based audit to examine the aspects of management most likely to be related to the major issue we had



identified. Or we could pin-point management weaknesses by a "desk top" comparison with other applied research management systems considered by the literature or experts to be good and appropriate.

We selected the latter alternative in view of the limited time and resources available. For the sake of completeness, we are including the essence of our "desk top" analysis.

**Our findings.** Our qualitative findings provided the following "typical" or "most likely" major characteristics of the research projects:

- the research project was in the area of the researcher's post-graduate specialization;
- the research related specifically to some aspect of the Great Lakes (close to where the major research institute was located);
- it had received budget support for five years;
- the results of the research tended to be more problem revealing rather than problem solving;
- the research had not yet influenced water management;
- the research had yielded many papers published in reputable professional journals;
- the research work was original; and
- it had enabled the researcher to be recognized by his peers as an authority in a specialized area.

**Basic research.** We found in our survey of the current literature on research management and through consultation with experts and authorities, that





the following were likely to be the important characteristics of basic research. Such research is:

- predominantly concerned with advancing the frontiers of scientific knowledge for **understanding**;
- not concerned with the utility of the results;
- not concerned with social, political, economic implications or effects of the research;
- initiated from the bottom up;
- done by a researcher working alone rather than in a team;
- judged by peers who learn of it through publication in learned journals;
- available to the world community; and
- conducted on a long-time scale with little pressure to complete or finish.

**Applied research.** In contrast, the following emerged as the characteristics of applied research:

- predominantly concerned with the **utility** of new knowledge;
- intimately associated with trying to understand actual needs and practical problems, making it more difficult to design clear-cut experiments;
- usually a team activity;



- concerned with social, economic, political effects or implications;
- judged more by the utility of the research product than by peer acceptance;
- not usually widely available through publication;
- initiated from the top down, with priorities and pressure to produce; and
- conducted over much shorter time than basic research.

Comparing our findings with the two categories of characteristics, it was easy to diagnose the reason for the low use of the research. The research activity that was being conducted at the two inland water research institutes was more basic than applied contrary to what our audit planning work had led us to believe it should be.

Departmental management was very receptive to our recommendations that the management in the two research institutes should be modified to favour applied rather than basic research. The ADM responsible for water management research confirmed in writing his agreement with our methodology, findings and recommendations.

The Task Force on Federal Policies and Programs for Technical Development makes the following relevant observations:

... The most effective research and development, we believe, is 'demand driven', where the research is undertaken in response to a clearly defined need.... The least effective research and development is 'supply-driven', where the research institutions, rather than an external market, define the problem and, at their own speed, seek





solutions. Sometimes they come up with brilliant solutions for which there is no problem... products for which there is no market.

... We believe that closer relationships with end users of the research is the best prescription for their continued vitality... .

### **Advantages of the Results-oriented Approach Over the Procedures-based Approach**

With some temerity, we have characterized the results-oriented approach as having four distinct stages.

The **first stage** is a review to test, on the basis of simple criteria, the inherent risk of the activity or the risk associated with the activity. This is a test of the major output of the activity or of the vital connection that it has or should have to other activities. In the project we used for an example, the inherent risk of applied research is that it may tend to become an end in itself, rather than a means to an end. Therefore, the criteria of use was a test of whether or not the applied research activity was connected to the intended clients. The following are other examples of areas that lend themselves to this approach:

**Staff Functions.** The inherent risk is that staff functions are not connected to or used by operations or management. The simple criterion of use would be applicable here.

**Libraries and Technical Information Activities.** The inherent risk again is lack of use by intended clients.

**Program Evaluation.** Notwithstanding the existing formal procedures-based approach of the OAG, the inherent risk is the lack of use by senior management.

The **second stage** is to assess the quantitative findings of the first stage in the context of the qualitative findings which will have been observed as a



by-product of the first stage. Should the activity not meet the established criteria, the qualitative findings will assist in the design of a **selective** procedures-based audit to deal with those aspects of the management system that could be weak and hence responsible for the criteria not being met.

**The third stage** is to execute the **selective** procedures-based audit. As discussed earlier, this can be either a "desk-top" review or a detailed field review of the particular management system or systems that are suspected of being weak.

**The fourth stage** is reporting. In our experience and judgement, it is not necessary to report the conclusions in the same order as the audit was carried out. The results-oriented audit approach could have revealed that the activity was not producing an appropriate output or was not appropriately connected; however, it could be reported as a specific management weakness.

What occurs to us, as a further general observation, is that the Office is not bound by its legislative mandate to a particular way of carrying out its audit work; our legislative mandate only spells out **how and what we report**.

Although we fully appreciate that a results-oriented approach which progresses from an activity to a program and finally to an entity could be tantamount to an assessment of effectiveness, this is permissible providing that we do not **report** directly on effectiveness. If we use the results-oriented approach in our audit work as a means of quickly identifying and diagnosing management system weaknesses, and subsequently only report on the system weakness, we have stayed entirely within the mandate of the Office.

While there are government programs that are not suited to a results-oriented approach and where the measurement of effectiveness is extremely difficult, there are many programs where results could be measured relatively simply. The following are examples of such areas.

**Weather Forecasting.** The inherent risk is that the activity is pursuing the advancement of meteorological science rather than producing



outputs relevant to its stated priorities of safety of life, security of property, and increased efficiency of weather-dependent economic activities.

**Home Insulation Program.** The inherent risk is that the program does not achieve significant benefits compared to cost.

**Assisted Housing.** The inherent risk is that the intended clients were not served and that those who were served experienced excessively rich housing benefits.

**Canada Post Corporation.** The inherent risk is that mail service is now inferior to other means of communication. The monopoly of Canada Post is no longer relevant.

**Unemployment Insurance.** The inherent risk is that such payments encourage the status of "Unemployed".

**Agriculture Canada.** The inherent risk is that the programs in agriculture are not tailored to the current needs of Canadian agriculture.

**Veterans Affairs.** The inherent risk is that the services currently provided are an inferior duplication of social services currently available from a variety of sources.

In our opinion, the following are the significant advantages of the results-oriented approach over comprehensive auditing (while accepting the fact that there are activity areas where it cannot be used).

- It enhances the productivity of OAG resources:
  - It allows rapid identification of the major issues.
  - It allows OAG resources to be focused selectively on management system weaknesses.





- It increases the professional standing of the OAG staff because:
  - It is more acceptable to the auditee than a procedures-based audit in that its purpose and language are simple.
  - It is more likely to leave behind a useful management tool and perspective to the auditee.
  - It allows the preparation of simple management reports.
  - The evidence is usually compelling in that it is dealing directly with the results of the activity. A systems-based approach is at best a proxy measure of due regard -- the existence of the best procedure does not guarantee due regard.
- It may allow a more acceptable form of reporting to Parliament program effects (or indeed program evaluation) where questions of policy are clearly not being questioned. For example, in the case of Canadair, the Office does not question the desirability of keeping Canadian Aerospace workers employed, but it can report that the output of Canadair is not a marketable product.

### **A Simplified Approach to Auditing Applied Research**

There is no doubt, in our opinion and experience, that applied research is most amenable to a results-oriented audit approach. We believe it is both far more productive and easier to execute than a procedures-based approach. Since there are many resources in the federal government devoted to applied research, we recommend that our approach be adopted, with suitable variations to tailor questionnaires to the specific characteristics of the applied research activity.

The four sections of these questionnaires are:

1. A descriptive section used to obtain tombstone data such as project name, how initiated, when initiated, when completed, together with a general description of the actual research.



2. A substantive section to elicit a description of the research product; the major conclusions; the major recommendations; the implications of these; the classification of the area of research affected; an assessment of the value of this research to the researcher, the user and to Canada; a description of the user and the use to which it is being put; and a classification of the use, as opposed to the user.
3. A sign-off section.
4. A budgetary section.

### **Interviewing by Telephone**

One of the by-products of our audit project was the discovery that our productivity could be increased (with no significant detriment to the integrity of the audit project) by using the telephone to conduct interviews. Although our experience was all derived from one audit project, we believe that the following generalizations are possible:

- With a well structured questionnaire, the same type of information can be collected by telephone as by person-to-person interviews.
- Considerable savings in travel time and set-up time are possible.
- Having to obtain sign-off by mail, although admittedly dependent on the Postal Service, was not considered to be a disadvantage. Normally, person-to-person interviews would require the use of the mail to exchange formal minutes or records of the substantive aspects of the meeting. In our project, we obtained the required sign-off in every telephone interview.





- There was a consensus among the three auditors who conducted telephone interviews that the telephone afforded a sense of privacy to both parties. Exchanges were facilitated and confidences more readily volunteered than in person-to-person situations. Subsequently, we learned that this had been established in social science research, where the telephone was used to interview subjects in delicate or personal areas.
- The telephone also afforded an opportunity for carrying out rapid follow-up when matters could not be dealt with during the course of a single interview.

### **Maintaining a Productive Relationship with the Auditee**

From a lessons-learned perspective, we consider that the most universally transferable aspect of this project was our ability to maintain clear communication channels between auditor and auditee from audit project design through to final reporting. The following outlines some of the steps in establishing this communication.

1. The auditee was apprised of our audit interest before we began the audit project design.
2. We held formal sessions with the auditee to exchange options for criteria and audit approach.
3. We obtained consensus with the auditee both on the audit criterion and the audit approach.
4. The auditee was involved with the design of questionnaires, the testing and a pilot project to determine exactly how the audit project would be executed.



5. We discussed the early results and findings of the audit with the auditee.
6. Before preparing the project report, we made a comprehensive presentation to the auditee covering our findings, conclusions and likely recommendations.
7. At each of the above stages, we modified our audit work to reflect the results of dialogue with the auditee.

The greatest benefits of maintaining a productive relationship with the client were those we received during the course of our final debriefing with senior management. Although our findings and conclusions were not positive for the ADM responsible, he defended our methodology, findings and recommendations when they were criticized by other ADMs.

#### **Impact of the Approach on the OAG Mandate and the Productivity of the Office**

Although we invite discussions on the impact of the results-oriented approach, our views are, succinctly, as follows:

- Our mandate relates to **what we report to Parliament**, not to how we conduct our audit work. We maintain that, although the results-oriented approach may in certain cases amount to an implicit evaluation of the effectiveness of an activity or program, we would report our findings as comment on management systems. Our evaluation would be the evidence for our opinion on due regard for economy and efficiency by management.
- Since the results-oriented approach allows for a rapid identification of major issues and subsequent design of a selective procedures-based audit approach, we contend that it offers substantial potential for increased office productivity.





### Conclusion

The results-oriented approach to comprehensive audit has, in certain areas, significant potential benefits for the Office of the Auditor General. There is therefore a need to experiment with this approach on a broader scale and to collect a greater depth of experience.







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